



A.D. 1872, 11th NOVEMBER. N° 3355.

Treating Sewage Deposits, &c.

LETTERS PATENT to Henry Young Darracott Scott, of Ealing, in the County of Middlesex, Major-General, C. B., for the Invention of “**IMPROVED APPARATUS TO BE USED IN THE TREATMENT OF SEWAGE DEPOSITS AND OTHER LIKE SUBSTANCES.**”

Sealed the 9th May 1873, and dated the 11th November 1872.

PROVISIONAL SPECIFICATION left by the said Henry Young Darracott Scott at the Office of the Commissioners of Patents, with his Petition, on the 11th November 1872.

I, HENRY YOUNG DARRACOTT SCOTT, of Ealing, in the County of Middlesex, Major-General, C. B., do hereby declare the nature of the said Invention for “**IMPROVED APPARATUS TO BE USED IN THE TREATMENT OF SEWAGE DEPOSITS AND OTHER LIKE SUBSTANCES,**” to be as follows :—

The object of this Invention is the drying of sewage deposits, mud, and other wet substances of analogous consistency, such as pottery clays,
10 in an expeditious and economical manner.

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In carrying out my Invention I subject the wet material to heat in an apparatus of novel construction.

This apparatus consists of a drying floor of a corrugated or indented form, but with the elevations on the upper side so sloped as not to allow of permanent lodgements of matter upon them. In the hollows 5 on the upper side archimedean screws are kept in rotation, and by so doing they constantly thrust forward the material to be dried. These screws need not have their threads continuous, but the threads may be arranged with intervals so as to allow of the introduction of prongs or tongues to prevent the screws from clogging. These prongs or tongues 10 are attached to the fixed part of the bed, and are therefore stationary while the screws rotate.

The material to be dried is supplied from a hopper or vessel made of perforated metal, or other suitable material covered with canvas or other porous substance, so as to act as a filtering as well as a feeding appa- 15 ratus, whereby much of the water may be got rid of before the sewage deposit, mud, or other material reaches the drying plate or bed.

Beneath the drying bed a flame or heated air is made to play on the under surface, and the gases formed or introduced under the corrugated floor are either allowed to escape at the end of the apparatus or are 20 brought back over the upper side of the floor, so as to expedite the evaporation of the moisture.

At the far end of the apparatus the material is pushed out by the action of the screws, either in a dried pulverulent condition or sufficiently freed from moisture to bear making into bricks.

25

The brick form I prefer to give by dies adapted to the exit apertures of the apparatus, and when made into bricks or other suitable shape, the material can be readily further desiccated in kilns, or on ordinary drying floors, or by being stacked in the open air.

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SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Henry Young Darracott Scott in the Great Seal Patent Office on the 10th May 1873.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, HENRY
5 YOUNG DARRACOTT SCOTT, of Ealing, in the County of Middlesex, Major-General, C.B., send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Eleventh day of November, in the year of our Lord One thousand eight hundred and seventy-two, in the thirty-
10 sixth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Henry Young Darracott Scott, Her special licence that I, the said Henry Young Darracott, my executors, administrators, and assigns, or such others as I, the said Henry Young Darracott Scott, my executors, administrators, and assigns, should at any
15 time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVED APPARATUS TO BE USED IN THE TREATMENT OF
20 SEWAGE DEPOSITS AND OTHER LIKE SUBSTANCES," upon the condition (amongst others) that I, the said Henry Young Darracott Scott, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be
25 performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Henry Young Darracott Scott, do hereby declare the nature of my said Invention, and in what manner
30 the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawing hereunto annexed, and to the letters and figures marked thereon (that is to say).:—

The object of this Invention is the drying of sewage deposits, mud,
35 and other wet substances of analogous consistency, such as pottery clays, in an expeditious and economical manner.

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In carrying out my Invention, I subject the wet material to heat in an apparatus of novel construction. This apparatus is shewn in the accompanying Drawing, in which Fig. 1 is a longitudinal vertical section of the drying apparatus, and Fig. 2 is a transverse vertical section of the same.

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The apparatus consists of a drying floor of a corrugated or indented form. This floor is constructed of any convenient number of semicircular or concave iron or other troughs or gutters *a, a, a*, arranged parallel to each other, the narrow spaces between them being covered over with inverted tiles or gutters *b, b*. The upper side of the drying floor is so sloped or inclined, as shewn in the Drawing, so as not to allow of permanent lodgments of matter upon them. In the hollows on the upper side of the troughs *a, a*, are placed archimedean screws *c, c*, which are kept in rotation by means of worms *d*, Fig. 1, which gear into worm wheels *c'* on the outer ends of the archimedean screw shafts. Rotary motion is communicated to the worm shaft *d* in any convenient manner, and by so doing the screws *c* will constantly thrust forward the material to be dried. These screws need not have their threads continuous, but the threads may be arranged with intervals so as to allow of the introduction of prongs or tongues to prevent the screws from clogging. These prongs or tongues are attached to the concave troughs *a, a*, or any other fixed part of the drying bed, and are therefore stationary while the screws *c* rotate.

The material to be dried is supplied from a hopper or vessel *e* which may be made of perforated metal or other suitable material covered with canvas or other porous substance, so as to act as a filtering as well as a feeding apparatus, whereby much of the water may be got rid of before the sewage deposit, mud, or other material reaches the drying plate or bed. The mud or sludge will fall from the open end of the hopper *e* on to the upper end of the screws and troughs, and will be carried slowly along the latter by the rotation of the screws.

Beneath the drying bed a flame or heated air from the furnace or fire-place *f* is made to play on the curved or corrugated under surface of the drying floor. The gases formed or introduced under the corrugated floor are either allowed to escape at the end of the apparatus, or by removing some of the inverted tiles at the outer end, the gases

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and heat may be allowed to pass up between the concave troughs, and the heat will then be brought back over the upper side of the floor, as shewn in Fig. 1, and will expedite the evaporation of the moisture from the mud or sludge. The gases finally pass from the drying chamber into
5 the flue or chimney *g*, and escape from thence into the atmosphere.

The mud or sludge is pushed out at the far end of the apparatus by the action of the screws *c, c*, either in a dried pulverulent condition, or sufficiently freed from moisture to bear being moulded or made into bricks. When discharged from the drying floor the dried or partially
10 dried mud or sludge is deposited on a table, from which it may be moved by hand and moulded into any desired form; or it may be deposited on a travelling endless cloth and be conveyed away and dropped into any convenient receptacle.

The partially dried substance may be moulded into the form of rough
15 bricks by means of dies adapted to the exit aperture of the apparatus; and when made into bricks or other suitable shapes the material can be readily further desiccated in kilns, or on ordinary drying floors, or by being stacked in the open air, and may then be burned or calcined in kilns if desired.

20 The chimney *g* is provided with a damper *h*, by opening which the gases from the fire-place may pass direct to the chimney until the fire is well lighted.

Instead of deriving the heat (for drying the sludge) from a fire-place specially constructed for the purpose as shewn in the Drawing, I prefer
25 for economical reasons to make use of any waste heat that may be available, as from steam boiler furnaces, kilns, or other sources; I then conduct the heated gases obtained from such sources to the under side of the drying floor in the way already explained.

When waste heat is not available, I provide a special fire-place as
30 above set forth.

Having now described my Invention of improved apparatus to be used in the treatment of sewage deposits and other like substances, and having explained the manner of carrying the same into effect, I claim as the Invention secured to me by Letters Patent, as aforesaid, con-
35 structing the floors of the drying chamber of a corrugated or indented

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form, or of separate semicircular or concave troughs, so as to present an extensive heating surface, as herein set forth, in combination with slowly rotating screws or other equivalent device for conveying the mud, sludge, or other material to be operated upon along the drying floor to the exit aperture, as herein set forth.

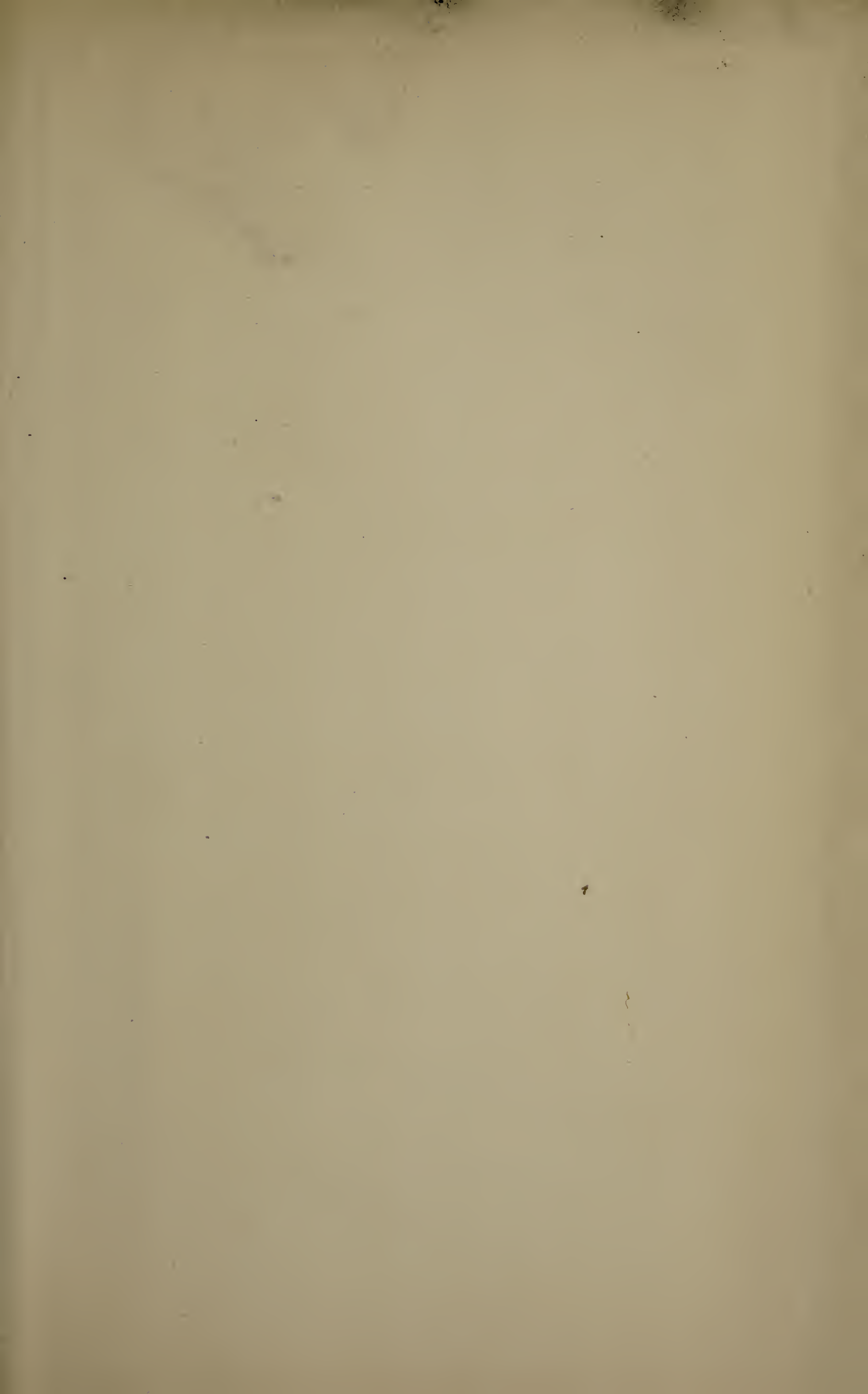
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In witness whereof, I, the said Henry Young Darracott Scott, have hereunto set my hand and seal, the Tenth day of May, in the year of our Lord One thousand eight hundred and seventy-three.

HENRY Y. D. SCOTT. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1873.



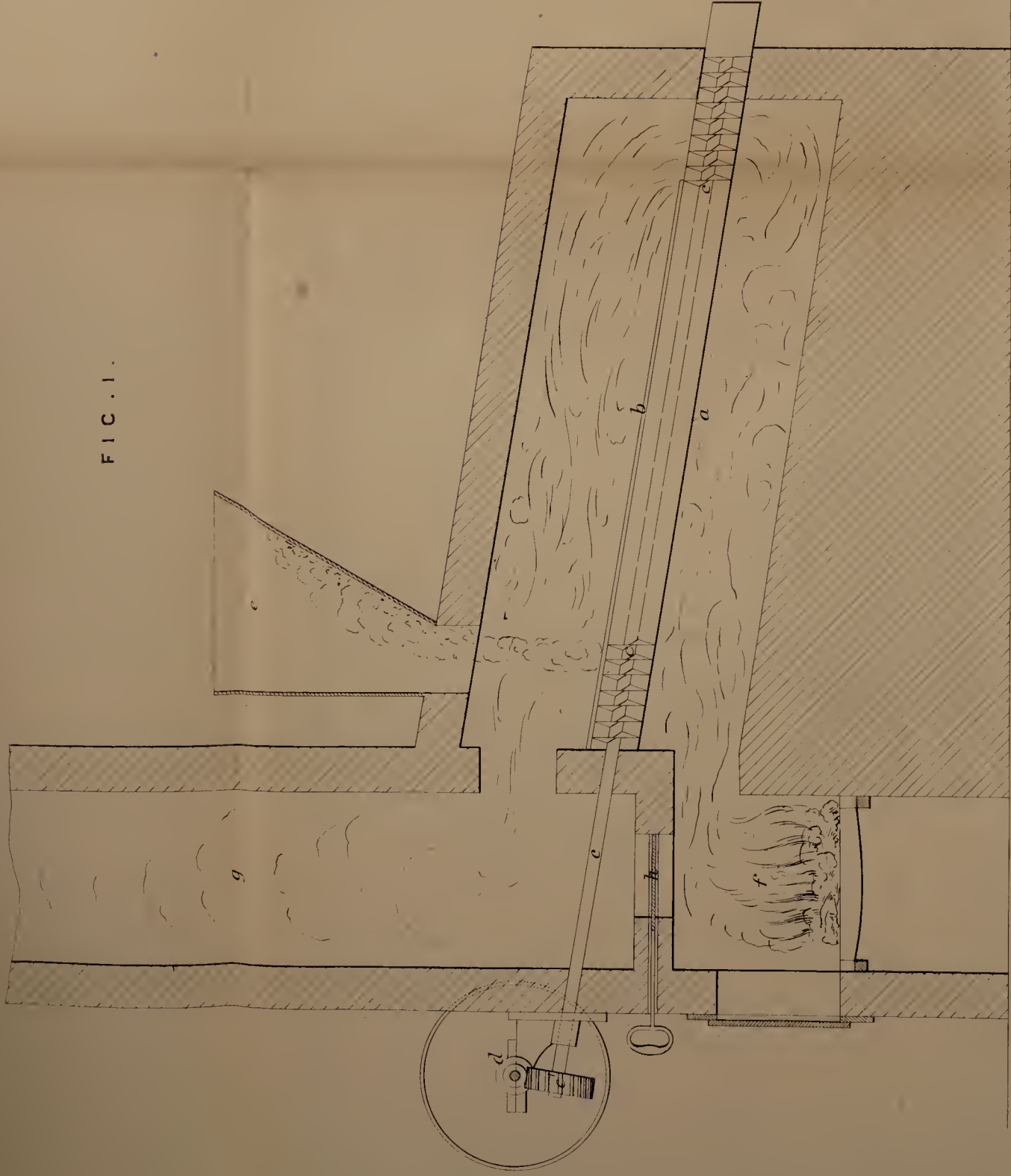


FIG. 1.

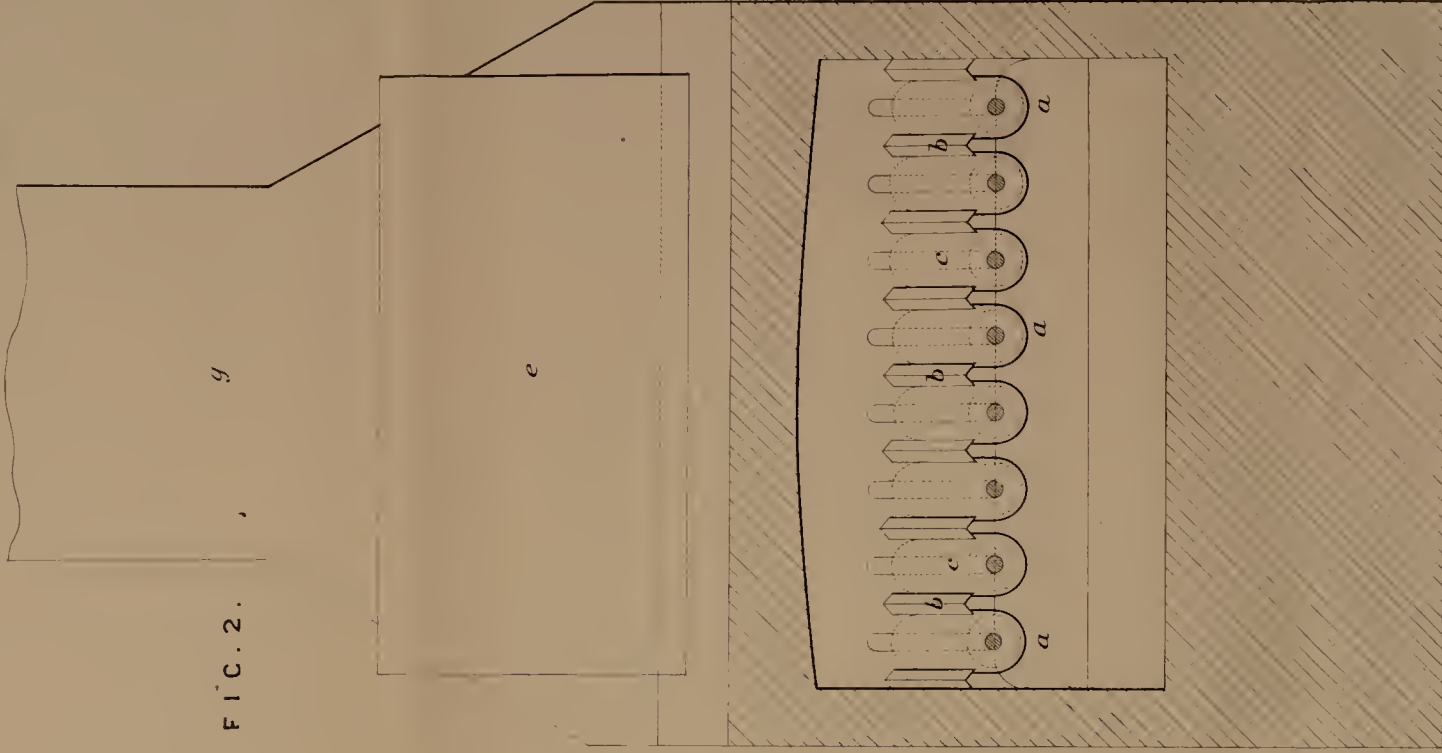


FIG. 2.

